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DISEASES OF THE CHEST

(A MONTHLY PUBLICATION)

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"The most important factor in diagnosis in the majority of cases of pulmonary tuberculosis is keeping the disease in mind."

Lawrason Brown, M. D.

Editorial Comment

On to Atlantic City

A GLANCE at the program for the annual meeting on June seventh, will surely encourage every one of us to attend. In addition to the scientific programes, Doctor Burge has arranged for an interesting tuberculosis exhibit in conjunction with the scientific exhibits of the A. M. A. One of our members will be in charge of the exhibit at all times throughout the meeting. Every member of the Federation of American Sanatoria should arrange to attend this meeting. The eastern members will undoubtedly attend in large numbers; we hope our western fellows will go in as large numbers as possible. The distance is great, but it will be worth the time and expense to all of us. Make your reservation at the Ritz Carlton now.

C. M. H.

Scientific Program on Tuberculosis: A. M. A. Meeting

WE ARE pleased to announce the following program to be given at the meeting of the American Medical Association, in the Scientific Assembly before the Section on Practice of Medicine, on the morning of June 10th, at the Auditorium, Atlantic City, New Jersey.

PARASITISM OF THE TUBERCLE BACILLUS—
William Charles White,
Washington, D. C.

THE LASTING CURE OF TUBERCULOSIS—
J. Burns Amberson,
New York, N. Y.

THE DIAGNOSIS AND MANAGEMENT OF LATENT, SUSPECTED AND EARLY CLINICAL TUBERCULOSIS—
H. W. Hetherington, Philadelphia, Pa.

Dr. Olin West, Secretary and General Manager of the American Medical Association has extended an invitation to the members of the Federation of American Sanatoria to attend this Session and to enter into the discussion of the papers.

M. K.

Atlantic City Meeting: Federation of American Sanatoria

THE Committee on Arrangements for the Third Annual Meeting of the Federation of American Sanatoria reports that plans are rapidly being completed for the entertainment of the members of the F. A. S., who are planning on attending the meeting this year, at Atlantic City, June 7th to 11th.

Most of the activities of the Federation of American Sanatoria will take place on Monday, June 7th; and it is hoped that the members of the F. A. S., will make their plans so as to be present at the scientific and social programs being planned for that day.

The beautiful Ritz-Carlton Hotel at Atlantic City has been selected by the Committee on Arrangements for the center of F. A. S. activities, and our Luncheon Meeting and Banquet will be held at the Ritz-Carlton on Monday, June 7th. Notable speakers will address both

meetings.

The Administrative Meeting of the F. A. S. will be held at the Ritz-Carlton on the morning of June 7th; election of officers and important reports of committees with discussion, should be highly interesting to the members of the Federation of American Sanatoria.

Meeting your *old friends* and making *new friends* is always an interesting part of the F. A. S. meetings. MAKE YOUR PLANS NOW TO BE AT THE RITZ-CARLTON, ATLANTIC CITY, ON THE 7th OF JUNE. M. K.

Scientific Program on Diseases of the Chest: F. A. S. Program

THE SCIENTIFIC Program Committee for the Atlantic City meeting of the Federation of American Sanatoria announces the following program to be given at the Ritz-Carlton Hotel, Atlantic City, on the afternoon of June 7th.

EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS— *M. W. Newcomb*, Browns Mills, N. J.

THE COLLAPSE OF CAVITIES IN PULMONARY TUBERCULOSIS BY SURGICAL MEANS— *Flick and Gibbon*, Philadelphia, Pa.

SILICOSIS— *Ross K. Childerhose*, Allenwood, Pa.

BRONCHOGRAPHY— *Burge and Post*, Philadelphia, Pa.

THE PRESENT STATUS OF SURGICAL TREATMENT OF PULMONARY TUBERCULOSIS— *A. J. Cohen*, Philadelphia, Pa.

M. K.

Distribution of Tuberculosis Mortality in Southeastern United States

THE U. S. Public Health Service has made many valuable surveys recently on the distribution of the mortality of tuberculosis. Dr. C. C. Dauer and Dr. L. L. Lumsden of the U. S. Public Health Service have recently released the following concerning the Southeastern United States:

Tuberculosis mortality for white persons has been for a period of years higher in Tennessee and Kentucky than in the registration area as a whole. Virginia and Maryland have had rates about equal to those for the entire country. The remainder of the South has had a relatively low rate.

Tuberculosis mortality in the colored population has been much lower in the southern than in the northern states.

In the southeastern section of the country the area of high mortality for the white population centers in Tennessee and Kentucky. It declines gradually in all directions from this central zone. The areas or zones of high mortality for the colored population of the southeastern states are quite similar in extent to those for the white population. C. M. H.

A New Conception of Bronchiectasis

A PAPER bearing this title was presented at the recent meeting of the Arizona State Medical Association by Doctors C. S. Kibler and S. H. Watson of Tucson, Arizona.

They reported finding a number of cases among patients coming under their observation recently which were of allergic etiology. In these cases eosinophils were found in the sputum in fairly large numbers, and upon the proper testing from an allergic standpoint, and the application of the treatment indicated as a result of this testing, these patients were relieved of all symptoms of bronchiectasis.

The authors suggested that in examining the sputum for eosinophils a single examination, if negative, should not be accepted as sufficient. They sometimes found specimens negative when another specimen obtained from the same patient a few hours later would prove positive.

Doctors Kibler and Watson are to be congratulated upon the presentation of this new theory in the etiology and treatment of a most troublesome disease, the successful treatment of which has not been entirely satisfactory in the past; and it is hoped that other investigators and clinicians will follow their lead with a further study on a larger series of cases, and that the authors will continue to publish, from time to time, the results of their experience. R. B. H., SR.

PRESIDENT'S MESSAGE

NEXT MONTH the Federation of American Sanatoria will have completed its second year of service. I feel it has made a place for itself among the medical profession.

I trust we will always bear in mind the important work that has been so ably brought to the attention of the family physician. If tuberculosis is ever to be eliminated it must be done through the efforts of the man who first comes in contact with the patient. In ninety per cent of the cases it is the family physician who does this. I would not for a moment lessen the credit due to the voluntary health organizations, but from now on the burden of responsibility must be placed on the shoulders of the family physicians. It is our job, as the Federation of American Sanatoria, to keep them alive to this responsibility.

The family physician should be reminded that there are surer ways to make a diagnosis of tuberculosis, rather than by the use of the stethescope. In the hands of a man who has not been sufficiently trained, it is worse than useless. Often negative findings lead the doctor and the patient into a sense of false security. I believe it is responsible for more far advanced cases of tuberculosis than any other single agent. Too often the patient's physician, after placing the stethescope on the chest says, "John, I can't hear a thing." This statement may be true so far as he is concerned, but only because he cannot interpret correctly the things he does hear. This gives the doctor and the patient a false sense of security, which security will be shattered when the patient has an x-ray film taken by a good competent man.

It is not fair to expect the busy practitioner to hear what we hear who are always listening. It is up to us to show them an easier way, and it is so simple, I marvel that it has not come into universal use many years ago.

What then, can we tell the busy man? What are a few things the family physician should know about tuberculosis? *First,* impress him with his own importance in the tuberculosis battle. Tell him we cannot do our work without him. *Second,* tell him not to place too much stress on his negative stethescopic findings. A negative stethescopic diagnosis is even worse than useless. *Third,* tell him fatigue is the outstanding early symptom. Fatigue will show in ninety per cent of early cases. *Fourth,* tell him a cough lasting longer than five weeks is not caused by a cold or bronchitis. *Fifth,* tell him to have the sputum examined in all cases of cough lasting over five weeks. This is one of the first rules, and a single negative sputum is of no importance. *Sixth,* tell him to must have all chest cases x-rayed by a competent x-ray man. *Seventh,* tell him a slight pulmonary hemorrhage is often the first symptom of tuberculosis. It may even appear before fatigue. *Eighth,* tell him that temperature and loss of weight are both suspicious, but even here the x-ray will make the diagnosis easier for him.

If we, as the Federation of American Sanatoria, can awaken the family physician to bear in mind these few rules, I predict it will not be many years before tuberculosis will not be the Captain of the Hosts of Death. Every member should endeavor to get a place on his County Medical Society program, and I would advise him to talk only on one topic, namely,—*A Few Things the Family Physician Should Know about Tuberculosis.* These, summed up are: 1. His Own Importance. 2. Fatigue. 3. Cough lasting longer than five weeks. 4. Sputum examinations. 5. Loss of weight, and a temperature. 6. And most important of all, always have him x-rayed. It is the constant reiteration of these facts that will bring results. It is not for the Federation members to go into a scientific discussion of the disease. Other organizations are better able to do this than we are. Our work must be with the family physician, and the only place we can reach him is through his own Medical Societies.

WILLIAM DEVITT, PRESIDENT.

Early Tuberculosis

BY
A. A. TOMBAUGH, M.D.
McConnelsville, Ohio

WHILE great progress has been made in the reduction of the mortality from tuberculosis in the past quarter century, yet it still ranks as one of the greatest agencies for destroying human life and so demands the earnest attention of all practitioners of medicine.

The very fact that the mortality has been greatly reduced calls for greater interest on the part of the profession than has ever yet been manifested. For now we can truthfully say it is a preventable and curable disease. But regardless of the progress made, advanced tuberculosis still remains a menace to the individual who has it and through him to the race.

Early tuberculosis can nearly always be healed with restoration of the patient to an efficiency little if any short of normal. Even if one is suffering from advanced lesions, he may still overcome the disease; but he maintains his health thereafter only by living carefully and always bearing in mind that he has had a serious infection which may again be stirred to activity through indiscretion or stress.

The ravages of tuberculosis can best be stayed by eliciting the earnest cooperation of general medical men. Specialists may make the diagnosis with greater accuracy because their attention is constantly held to this one subject, but specialists do not see the case first. The man who sees the disease earliest is the family physician, so upon him rests the burden of early diagnosis.

The most important thing for the physician to know is when to suspect the presence of active tuberculosis. He can get his mind in the most advantageous mood for aiding in the fight against tuberculosis by keeping the disease always in mind and by being thoroughly imbued with hopefulness for a condition diagnosed and treated early, and with a realization of its seriousness if neglected.

For those who are not accustomed to making frequent chest examinations it should be known that a fairly accurate opinion may be formed in most cases of active tuberculosis by other methods of studying the patient. Of these the most important is the clinical history. By carefully analyzing the clinical history alone a very large majority of frank cases of early active tuberculosis may be diagnosed.

The symptoms of tuberculosis are many and varied. No one symptom alone is of value but all symptoms must be carefully considered and given a place in the diagnosis.

For the sake of brevity in giving the symptoms, Pottenger's classification will be used. Three groups are given:

1. Those due to toxemia and other causes acting generally.
2. Those due to reflex causes.
3. Those due to the tuberculous process itself.

Under those due to toxemia are listed:

I. Malaise, which is one of the very important symptoms of active tuberculosis—a gradually developing tiredness, one that seems not to be accounted for by anything the patient is doing and further may at times seem out of proportion to other signs of disease that may be present.

II. Loss of weight. During health a fairly regular weight is maintained by most people with variations of a pound or two in the course of weeks. If there be a loss of from five to ten pounds within a few weeks time it should be considered as having some serious nutritional change as a basis, such as is so frequently produced by the toxins of tuberculosis.

III. Temperature. A rise of temperature of a few tenths of a degree was formerly considered as a sufficient basis

for diagnosing tuberculosis. It is known today that other infections, instability of the nervous system and various other factors will cause a slight elevation of temperature. So temperature by itself is of little diagnostic value but in combination with malaise and loss of weight becomes of vast importance.

IV. The other symptoms under this group are night sweats, metabolic disturbances, digestive disturbances, and increased pulse rate.

Under those due to reflex causes:

I. Hoarseness and throat irritation. If one inquires carefully into the history, the patient will often complain of slight hoarseness and throat irritation. This is due to the reflex relationship between the pulmonary branches of the vagus and the laryngeal branches of the same nerve. Cough is a part of the same reflex.

II. Flushing of the face. This is a reflex through the vagus and 5th cranial. It rarely manifests itself unless the infiltration in the lung is fairly extensive and the disease active.

III. The other symptoms under this group include circulatory disturbances, chest and shoulder pains, and diminished motion on the affected side.

Under those due to the tuberculous process itself:

I. Hemoptysis. We formerly stated that spitting blood, unless it could be shown to come from the gums or a heart lesion, was due to tuberculosis but this must be revised as we now know that since the pandemic of influenza we have had many infections of the respiratory tract that now and then may cause spitting of blood. Tuberculosis is by far the most common cause of hemoptysis yet we should remember the other causes. Small streaks or specks may be disregarded. But any amount from a dram on up has a very significant diagnostic part to play.

II. Sputum. Sputum is of the greatest importance in diagnosis. If bacilli are found, that alone is sufficient. This is the only symptom on which, alone, a diagnosis can be made. Negative sputum, however, has no definite diagnostic significance. Yet a small amount of sputum coming on when the patient is below par or persisting for a time after acute bronchitis should be always considered as possibly being due to tuberculosis. One should not rely on the statement of the patient that he raises nothing. He should be given a cup and have him save all expectoration for a period of 24 to 48 hours and this should be concentrated and examined. Small amounts of sputum accompanied by toxic symptoms and cough are very indicative of tuberculosis.

III. Pleurisy. Pleurisy, whether dry or accompanied by effusion, is most often due to tuberculosis. Pleurisy with effusion without other known cause, has long been considered as being due to tuberculosis.

IV. Frequent and protracted colds. Tuberculosis at times in its early stages takes the form of repeated attacks of bronchitis. The patient usually considers each attack a cold. The symptoms in such cases are caused by a metastatic extension of the disease, usually caused by comparatively small numbers of bacilli, yet sufficient to produce an allergic reaction.

The patient usually has a slight elevation of temperature of four or five days duration, is toxic, has headache, suffers from malaise, loses appetite and some weight. He often thinks he is bilious. He usually coughs and may or may not expectorate. The toxic symptoms with temperature may clear up within four or five days or may hang on for several weeks. Even if the toxic symptoms subside after a few days, cough and expectoration, if present, usually continue for several days or weeks longer. The sputum during and immediately following the attack may show the presence of bacilli even though they disappear later. An x-ray at this time may show a flakiness which will pass away in a few days or weeks.

Of these three groups of symptoms the last group has the greatest significance,

since any one of the symptoms mentioned will lead to a positive diagnosis in itself if accompanied by one or more of the symptoms enumerated in the previous groups.

Diagnosis

It will be seen from this discussion of the symptoms of active tuberculosis that if physicians who are not specialists in diseases of the chest will learn to think of symptoms from the standpoint of their etiology and learn to put an interpretation upon them as they appear in combination, they can nearly always arrive at a probable diagnosis. If in doubt, or if they wish to make diagnosis more certain, there are other measures at their command which will aid.

1. Atrophy of soft tissues over chest. Often, on the first glance at a chest, one sees a lessening of tissue above the second rib anteriorly and the spine of the scapula posteriorly. Sometimes this is considered and spoken of as contraction of the apex but careful inspection with or even without palpation will reveal that there is a lessening in the subcutaneous tissue. It is thinner than below the second rib, or if it is confined to one side it is thinner than on the other side. Palpation either by feeling with the tips of the fingers or by picking up the tissues between the thumb and fingers will aid the eye very much in detecting this atrophy. This is an atrophy produced reflexly by some chronic inflammation in the lung, usually a tuberculosis.

2. Diminished motion of the side. The diagnosis of a pulmonary tuberculosis is strengthened very much by finding diminished motion present along with suspicious symptoms of other groups.

3. Rales. Rales heard on coughing or on inspiration following cough are valuable as indicating that inflammation is or has been present in the underlying lung, or pleura, or both. It requires considerable experience to properly interpret them and distinguish those in the lung from those in the pleura. Their presence, however, no matter what their origin, gives evidence that the underlying structures are or have been the seat of inflammation. It is necessary to be on the lookout for rales in the tissues surrounding the hilum and toward the base as well as apex, for we find a great deal of tuberculosis starting in these areas of the lung.

4. X-ray. The x-ray is assuming a very important role in the diagnosis of chest diseases today. Many errors are being committed because of placing too much confidence in a film regardless of its quality. I see many films which are overshot and underdeveloped, or overshot alone, in which the rays pass through without causing shadows even though sufficient disease to cause shadows be present. The best plate is a moderately soft one, developed carefully to bring out detail. Such a plate will aid greatly in diagnosis. A poor plate shows no more than a poor physical examination and the value of the two are on a par. Soft flaky shadows are most significant of active tuberculosis. They may be in any part of the lung but are most common above the third rib, not necessarily at the apex. They are often found near the hilus running out toward either the apex or base. Flakiness is present only when an area of softening or an allergic reaction is present. When this has passed away, as it will after a few weeks following a metastasis or re-inoculation of mild degree, the x-ray may fail to show the disease.

5. Tuberculin. The tuberculin test should always be used in case of doubt but more particularly should this test be used in those cases in which there is a suspicion of tuberculosis in children between the ages of 2 and 12 years as very often in this type of case, due to the vagueness of all symptoms complained of, there may be some small area or glands which are overlooked on physical or x-ray examination and only the tuberculin test will reveal these.

(Continued to page 26)

How to Handle Asthmatic Patients

BY
A. A. LEONIDOFF, M.D.
Poughkeepsie, N. Y.

THE LITERATURE of allergy is so copious that it is impossible for the general practicioner to follow up all of it, and very often modern therapeutic methods are so confusing that the physician finds himself at a loss. However, in my judgment, every physician who treats asthma and allied conditions should have a definite plan for handling such patients. I will endeavor to present the method which has proved most satisfactory for me, briefly, and without going into the discussion of the different theories, statistics, and technicalities.

First I want to stress the Jackson dictum, "All is not asthma that wheezes." True asthma must be differentiated from paroxysmal dispnea caused by conditions of the larnyx, trachea, chronic bronchitis, tuberculosis, neoplasm, bronchiectasis, and cardio-vascular diseases. There are numerous conditions, especially of nasal origin, which could be responsible for wheezing, and which should be detected before the physician commences special investigation.

The simplest classification of asthma divides cases into two groups: (1) cases due to extrinsic causes; and (2) those due to intrinsic. The first group usually affects adolescents and adults; the second, young children and elderly persons. This classification is not exact, however, as there are exceptions, but for practical purposes it can be of some assistance. I shall not try to enumerate all the wide varieties of sensitizing materials which may cause extrinsic asthma. The cause of intrinsic asthma should be sought within the body, usually in infections of gums, tonsils, sinuses, bronchial tree, gall bladder, appendix, ovaries, and other organs. Here again, it is the first duty of the physician to give a complete and exhaustive physical examination. I do not mean that every suspicious appendix or every doubtful gall bladder should be removed, but I do believe that after complete failure to find the cause of asthma the physician has a right to consider an operation justified. There are numerous published reports which support this belief.

What is the mechanism in bronchial asthma? There are two: the first, spasmodic, characterized by broncho-spasm, is usually of non-allergic origin, and is caused by local irritants, psychogenic and endocrine disfunctions, and reflex of vagus excitants from the nose and other parts of the body. The second, exudative, characterized by broncho-edema, is of allergic origin and is caused by inhalants, ingestants, focal infection, and injectants (serums). Of course, there are many cases of mixed types, but this classification will ordinarily give a better understanding of the case and facilitate its handling.

In taking history the physician should always remember to take a complete record of familial allergy. "Hypersensitive parents commonly beget hypersensitive children; but it does not follow that the sensitization is due to the same substance in both," wrote Dr. Schultz (Ill. Med. Jour. 69:33), and this statement has been corroborated by many other allergists—Dr. Cook in particular. Questioning should not be limited to asthma, hayfever, and hives, but details should be elicited concerning infantile eczema, idiosyncrasies to drugs, recurrent bronchitis, rhinitis, vomiting, and whether or not these conditions were associated with proteins.

A patient who gives a history of asthma should be asked for information concerning the month or season in which the attacks occur, if there are periodical catarrhal symptoms of nose and conjunctive, and what association, if any, there is between the onset of the attacks of asth-

ma and other diseases or operations. How surprisingly often asthma begins after nose or sinus operations! One wonders if the increase in the number of asthmatic sufferers could be a result of these operations? If so, the ENT men have a tremendous responsibility and should always keep in mind this possibility.

The asthmatic state should be traced from its beginning to the present, with especial reference to frequency, duration, time of attacks, effect of food, dust, changes of weather and seasons, effect of domestic animals, effect of hair, feathers, fur coats, blankets, and all other articles of this type. Very often knowledge of the occupations of members of the household, the location of the house, heating arrangements, proximity of stables, butcher shops, poultry markets, and factories will give important information. To illustrate the advantage of securing this type of information I wish to report the following case:

"A child, H., aged 4, had been suffering from asthmatic attacks for two years. The history failed to reveal anything of importance save that the father, who was a railway employee, had been transferred two years previously to a new station and had been obliged to rent a house on the outskirts of the village. After extensive questioning it was learned that a horse pasture was adjacent to this property. The mother was asked to pay especial attention to the wind direction at the time of the child's attacks and to consider a possible relationship between horse dandruff and the asthma. Subsequently she noticed that a wind from the direction of the pasture aggravated the attacks. Although it was evident from the history alone that the child was sensitive to horse dandruff, the complete scratch method revealed only one reaction, and that verified the above diagnosis."

Not all asthmatic histories, however, are as helpful as this one, for very often, in spite of painstaking history, nothing of significance can be discovered.

The physical examination should be thorough and complete. During fluroscopy I look especially for signs of bronchiectasis, neoplasm of the lung, emphysema, and pathology of the heart. I also send patients to specialists for complete nose-throat examinations. If the examination proves absolutely negative, except for the usual well known findings for asthma, special tests are begun.

First, the scratch test is employed in an effort to rule out any hypersensitiveness to common food proteins, inhalants, and epidermis, and if this is negative the intradermal test is made. When this fails to give a positive reaction, I occasionally use the opthalmic test. The problem of treating patients who give a definite reaction to the above mentioned tests is comparatively easy, for in the majority of these cases the patient's condition can be markedly improved, or entirely cured, by elimination of the responsible food protein or by careful and prolonged desensitization against the inhalant and epidermis.

"The physical examination of Miss M., fourteen-year-old high school girl, who had had asthma for four years, proved negative. She had noticed, however, being an observant youngster, that milk and pork usually aggravated her attacks. The scratch method showed a reaction not only to these foods but also a very marked one to goat hair. The rug in her room was found to be made of goat hair. After the rug was removed, concentrated milk substituted for raw, and pork omitted from the diet, the attacks ceased completely."

"Mr. R., aged 37, suffered from asthmatic attacks for four or five years. He gave a history of good health except for one 'touch of pneumonia.' The physical examination was negative, but the scratch method showed a marked reaction to mustard. Elimination of mustard from the diet stopped attacks. Incidentally, when the patient was told of the offending agent, he recalled that during his illness mustard plasters had been used

on his chest, mustard powder in his socks, and a home remedy containing mustard had been taken orally."

But what is to be done with the asthmatic case that does not give any positive reaction to exhaustive tests: First, I put the patient on special dietetic restrictions, so-called elimination diet, in the hope that something can be discovered by this simple procedure in spite of the negative tests. I believe there are numerous asthmatic patients whose scratch or intradermal tests are negative but whose offending protein can be elicited in this manner. The following case will illustrate my point:

"Mrs. F., aged 75, had been suffering from chronic bronchitis for forty years. It had gradually become worse with more pronounced and typical asthmatic attacks. It took us almost four months to find out that herring was responsible. The old lady at first refused to blame herring, but later proved to herself that the diagnosis was correct. She still has bronchitis, but now without asthmatic attacks."

I also give instructions at this point of procedure regarding the preparation and maintenance of a dust free room and recommend allergen proof encasings for beds and pillows. Failure of elimination diet should not discourage the physician; he should relentlessly continue his search for the cause.

It is a well known fact that bacteria plays some part in producing asthma, and my next step is to eliminate such a possibility. The patient is instructed to collect sputum during his attack, and this is sent to the laboratory for vaccine (1 per cent strength). It is my rule, in sending this specimen to the bacteriologist, to inform him of my suspicions and ask him to look for the prevalent bacteria. A minute dose of this vaccine is then injected intradermally. If the patient does not give a reaction, the vaccine is discarded, but if, on the other hand, a positive reaction results, it is diluted and gradually increased doses are given for immunization. Try to avoid marked general reactions. This is a different method from that in which we use a stock vaccine as a non-specific protein when local and general reactions are deliberately produced). Here might be of interest the work of Rawlings (Southwestern Medic. 19:288, 1935) who found Pertussis bacilli on the pharyngeal walls of 4 adult asthmatics. Sauer's pertussis vaccine gave very good therapeutic results.

Works of W. Anderson, D. P. Cole, M. J. Mandelbaum, and Ramirez definitely prove that injections of lipiodol are very beneficial to asthmatic cases. This applies not only to patients with bronchiectasis but also to those without. The procedure is simple and harmless and certainly warrants its use. 20 cc. of warm lipiodol injected through the trachea at weekly intervals has given excellent results in my cases. (Don't fail to test the patient's tolerance to iodine before injection). According to W. Anderson (N. Y. St. J. of Med. '36:1151, 1936) the oil "stimulates the secretory glands causing them to excrete large amounts of normal secretion which increases the fluid contents of the tubes. It dissolves the mucin in the secretion, renders it less viscid and more fluid, thus making possible its elimination by the bronchial drainage mechanism. It stimulates the bronchial mucosa, decreases congestion, absorbs, exudates, and restores the normal circulation. The rapid decrease of the bacterial flora from the sputum indicates its bactericidal action.

"It is also of value in forming a protective film over the surface of the mucosa, which prevents irritation by dust drying and the entrance of bacteria. Its high iodine content gives it a specific gravity much greater than the bronchial secretion. Immediately after the injection, it gravitates to the most dependent portion of the tubes, dislodges and displaces the secretion upward into the large tubes, where it is eliminated by the cough reflex."

"Captain B., aged 65, had been suffer-

ing from periodic asthmatic attacks for eight years. They finally became so severe and frequent that he was making constant trips to the hospital. After the failure of my usual procedure, I gave him lipiodol, and for the past twelve months he has suffered no attacks. He himself now knows when he needs the next injection and comes once every four or five weeks for treatment. A chest x-ray did not show anything abnormal except a small bulging just below the secondary bifurcation of the right bronchus."

When lipiodol fails to bring relief, I continue my investigation by sending the patient to a bronchoscopist to ascertain whether or not there may be some ulceration or other pathology which could not be detected by ordinary physical methods or x-ray, and which might be responsible for the condition. During the examination secretions of the bronchus are collected, and another vaccine is made in order to be one hundred per cent certain that bacteria are not the cause. As the irritability of mucous membrane is lessened by painting with silver nitrate, bronchoscopy affords an opportunity for the application of this treatment to the carina and distending bronchi, and it should be done at this time, by all means.

If, in spite of everything, the cause of the asthma continues to elude us, we should begin an investigation of any pathology, previously mentioned, which was discovered during the initial examination, and which could be a focus of infection. Work has been done by French investigators which has proved beyond doubt that endocrine disturbance, namely ovarian, very often produces asthmatic attacks. This should be kept in mind since a correction of the disturbance, according to their opinion, can eliminate attacks.

Even after exhaustive study the cause of asthma in a great number of cases may still remain unknown, and yet these patients need relief from their suffering. After all, a patient does not care what the cause may be, he wants relief, and it is the physician's duty to give it. Here the judicial appliance of modern methods can be of some assistance.

Treatment should be divided into two categories; one is concerned with immediate help, the second is prophylactic. Adrenalin is one of the most effective medicines for treating asthma. Balyeat, in his recently published book, *Allergic Diseases, Their Diagnosis and Treatment*, writes: "In the medical armamentarium at our command for the relief of asthmatic symptoms, adrenalin is by far the most efficacious for rapid symptomatic relief and is probably the least harmful of all drugs used by the asthmatic patient for temporary relief. An ideal drug for temporary relief of asthmatic symptoms is one that will relieve the patient quickly and seldom produce untoward symptoms. Adrenalin chloride solution 1:1000 given hypodermically in 5 to 10 minim doses affords prompt relief in the majority of cases, and in only an occasional case we find uncomfortable symptoms, such as headache, nervousness, etc., unless the drug is given frequently. In our experience, it is without question the drug 'par excellence' for the relief of asthmatic attacks."

Dr. James B. Graeser and Dr. A. H. Rowe introduced a new method of giving adrenalin by inhalation for relief of asthma. Since their publication, 1:100 solution of adrenalin has been used extensively with good results. It obviates the pain and bother of hypodermic injections, is easy to administer, and gives the patient a feeling of security, thus eliminating the great factor of neurogenic and psychogenic influence. Use of this solution requires only a special all-glass atomizer which delivers an even vapor-like spray free from droplets.

Dr. Hurst suggested that, when no relief is obtained from subcutaneous injection or inhalation of adrenalin, the so-called continuous method should be used: 2 minims of adrenalin 1:1000 injected intravenously every 3 minutes up to a maximum of 15 minims. One grain of

caffein sodium salicylate may be injected also in connection with the adrenalin. Pituitrin very often aids the action of the adrenalin. It is the consensus of opinion that morphine should not be used in asthmatic cases, but there is no doubt that many patients have been relieved only by such injections. Atropin is of especial value in cases of nervous origin.

Inhalants, such as fumes of stramonium leaves, are in common use, but their action depends upon their atropin content. In my experience they have proved of temporary benefit, but they leave the bronchus more sensitive than before and should not be used too often. Frequently the early beginnings of an asthmatic attack can be helped by administering a few drops of ephedrine inhalant in the nostrils. Capsules of ephedrine, in my opinion, are of little value.

In status asthmaticus, when all other treatments have proved ineffectual, deep anesthesia will give the patient much needed rest. Oil by rectum will many times answer the same purpose. I have used a small dose of avertin in a few selected cases with good results.

In carrying out prophylactic treatment I usually give the patient a general outline for his mode of living: he is instructed as to the importance of regular exercise, stimulation of skin by cold bath or sponging, and deep breathing exercises. Forced expiration and humming are particularly emphasized. I suggest that he keep a diary of his daily living routine, for this occasionally reveals some salient angle of the situation. To improve protein digestion, meat extract and alcohol before and during meals seem advantageous due to their stimulation of gastric secretions; on the other hand, fat and excessive consumption of carbohydrates are to be avoided. A ketogenic diet, consisting largely of meats, eggs, certain green vegetables, and broth, is very helpful. Every attempt should be made to regulate the bowels, evening meals should be avoided, and a day's starvation per week is to be recommended.

Non-specific desensitization (injection of peptone, tuberculin, milk, stock vaccine) have been used in a limited number of cases with conflicting results.

Hydrochloric acid, intravenously or by mouth, which has been so enthusiastically advocated, has proven of no value in my cases.

Autohemotheraphy was also useless.

Calcium and peptone by mouth was most unsatisfactory, except in a very few cases.

Sodium iodine and potassium iodine rarely gave good results.

In patients with slow pulse and dry skin, a small amount of thyroid extract may bring general sympathetic stimulation and some relief.

Intravenous injections of glucose, which assist the liver in dealing with abnormal proteins and fatty acids, are of some value.

Sympathectomy and injections of alcohol into the dorsal spinal nerves have their advocates.

Ultraviolet light, according to Day (Brit. Med. Jour. 3913:8, 1936) gives very promising results.

Barach (Ann. Int. Med. 8:739) has used a mixture of 80 per cent helium and 20 per cent oxygen with some satisfaction, but this treatment is expensive and requires considerable equipment.

X-ray treatment of severe asthma, according to C. K. Maytum and E. T. Leddy (Jour. of Allergy 8:66-70), Nov. 1936), brought symptomatic relief lasting many months to five of twenty-three patients with whom other measures had failed, and fifty per cent to seventy-five per cent relief lasting from three weeks to two months to eight more sufferers. Personally, I have had no experience with this method.

Short wave therapy has been used quite often in the last two years, and while I have had dramatic results in a few cases, others have been only encouraging.

These various therapeutic methods are

(Continued to page 26)

The Relation of the Sanatorium to the Treatment of Tuberculosis

BY
LeROY S. PETERS, M.D.
Albuquerque, New Mexico

WITH the discovery of the tubercle bacillus in 1882, the world believed tuberculosis as a disease affecting mankind had been as effectively conquered as had smallpox after the introduction of vaccine by Jenner. Dr. Trudeau had sought the Adirondacks where he proved at least his life was not to be snuffed out in the twinkling of an eye, and later established the Cottage Sanatorium for the treatment of tuberculosis. Here he proved by the trial and error method that rest plus good food and fresh air could arrest the disease in a fair percentage of patients. He learned in the school of hard knocks what is common knowledge today, but lived to give all who came after him a comprehensive knowledge of the disease, and the fundamentals in its treatment.

Climatic treatment of tuberculosis had been empirical up to this time, and patients have been advised to change climates as far back as records can be traced. Mountains, seashores, and deserts all had their day, but it was Dr. Trudeau's experiment in the Saranac Lake section that started the country on a sanatorium-building period which ultimately placed sanatoria in practically every state in the union.

The Southwest and the western seaboard saw the majority of private institutions built, while the East began the erection of state and later county and municipal sanatoria. The movement spread like wild-fire and the modern treatment of tuberculosis was begun in earnest. Again we were behind Europe, but once the movement started we outstripped them in things accomplished. In the mad race to build home institutions, climate was forgotten and the slogan "Stay at home and be cured" cut the percentage of climate chasers to the minimum. However, up to the world-wide chaos of 1929 those who could afford the luxury of climate still kept the health resorts full to overflowing. Then the crash, and with it the empty pocketbooks. The home institution came into its own. By home institution I mean the state, county and municipal and not the private sanatorium; that suffered along with its climatic relative. People flocked to the place that made possible a cure with little or no expenditure of money, and the wails of the private sanatorium owner both east and west mingled in one mighty cry, that still echoes from Maine to California and from Canada to the Gulf. But more about this later. These individuals have a real grievance.

In the early days the sanatorium treatment consisted of rest, good food, fresh air and expert supervision. There was little else to offer a patient. The progress of the disease had to be watched and the prognosis given by what the clinician could gather from physical examination and clinical symptoms alone. The advent of the x-ray and the various laboratory tests for determining activity and the progress in general were yet to come.

For the sake of close supervision, patients needed an institution and were more successfully treated there inasmuch as their regime was outlined for the entire twenty-four hours, and, what is more to the point, someone saw that this routine was carried out. When one asks for an argument relative to the value of sanatorium over home treatment and the questioner has stated that he will follow the same advice on routine at home, tell him it has never been done and that the proof of the pudding is in the eating—sanatoria can boast results that were never dreamed of by home treatment.

My personal experience also bears out this statement. For eighteen years I was directly connected with institutions, most of those years as medical director. For

the past twelve years I have been doing private practice. For satisfaction from all angles, the institution is far superior. In order to offset the disadvantage of private work, I attempt to place all patients in the beginning under sanatorium care in our so-called open institutions. Here we have nursing supervision and routine is carefully looked after. Still I firmly believe that a sanatorium with a medical director in charge is preferable.

I have attempted to show that in the beginning the sanatorium was a necessity for properly carrying out the rest regime. Nor has the advent of collapse therapy made it of less value to the patient who has just been given his diagnosis, and must be started on his tuberculosis education. Education of the tuberculous is best accomplished in the institutions. There is no more comparison between the sanatorium-educated patient and the home patient than there is between the correspondence school pupil and the student of a recognized university. The one is as handicapped in his fight for continued health as the other in his struggle for economic existence.

Collapse therapy has changed the attitude of many specialists in tuberculosis toward the sanatorium. In many cities, patients are given artificial pneumothorax at dispensaries and allowed to continue work in the early months of treatment. The lay magazines are making much of this "new cure" for tuberculosis. Even medical men are carried away by the spectacular results obtained, with the inevitable result that the average patient thinks if he or she can have a pneumothorax needle thrust into the pleural space or a phrenic nerve pulled out of his anatomy, his troubles are immediately at an end and the longed-for cure accomplished.

I realize as keenly as any of my colleagues that economic situations alter cases, and what can be done for an individual in one stratum of economic life cannot be done for one in a lower. Many times a patient comes to my office with barely enough money to buy bread. He has reached the desert, chasing a will o' the wisp, hoping the dry air will restore a worn-out physique and the sunshine will contract a cavity which occupies a third of his lung. That man must have something done for him. There are no charitable institutions in New Mexico, but there are people running sanatoria with the milk of human kindness tucked away inside. I put this patient to bed for a period long enough to collapse the bad lung and let him work. No doubt the dispensary care in large cities I referred to comes under the same classification. Something must be done for that type. By collapse therapy we have made it possible for this patient to resume his occupation and if the collapse is complete, rendered him no longer a menace to those with whom he may come in contact.

But when we advocate this type treatment it is because of economic necessity. It is not the ideal in compression therapy. It's a make-shift and must be looked upon as such. A collapse of a lung does not cure tuberculosis; it merely gives nature a chance to effect a result. It's unfortunate that medicine is penalized and forced into make-shift methods by a society that penalizes human beings and makes it necessary to offer half-way measures to prolong downtrodden lives.

To those more fortunate individuals, time makes for much better end results. They can and should be advised to enter a reputable sanatorium. There under proper conditions the patient has the advantage of study and when this study is complete, sane advice can be given as to methods of treatment. It may or may not be some form of collapse but if collapse it is, then continued residence in the institution of choice makes for a successful outcome.

We have spoken of pneumothorax and I think hinted at phrenic exaresis, but have not touched on thoracoplasty — which brings us to major surgery and therefore calls for a discussion of the sanatorium properly equipped for all

types of collapse treatment. The institution of early days needed a well-appointed kitchen, an attractive dining room, a recreation hall, and units for the accommodation of patients. Perhaps an infirmary could be found in a few if one searched long enough. A laboratory was a necessary adjunct for the routine examinations; later, x-ray machines became a necessity, but until recent years many plodded along with meager equipment. Now if an institution gives the best that is possible in the care of the tuberculous it must add a surgical unit or have access to a general hospital in a relatively short distance from the sanatorium grounds, so that the close cooperation between surgeon and tuberculosis specialist may exist, for this relationship or lack of it spells many times the difference between success or failure.

Where surgical units or access to nearby hospitals are lacking, it becomes necessary for the patient to travel long distances and to be placed in the hands of a surgeon who knows nothing of the individual except that some doctor wants his ribs removed. In the final analysis the medical man is the one whose judgment prompted the operative advice, and the successful chest surgeon is the man who understands this fact and works in close association with his medical colleague.

I now come to the last phase of this discussion. What of the private sanatorium and its struggle for existence? Where will this struggle end? Unless something is done to meet the situation, the answer is failure. There can be nothing else under existing conditions. The state, county and municipal institutions are taking the private patient at the expense of the privately owned sanatorium. The man who owns his institution should have some protection. He along with the rest of the tax-paying group is helping support the institution that is forcing him into bankruptcy. When these institutions were built it was the opinion of most of us, I believe, that they were for the care of indigents or people who could ill afford private sanatoria. If we were right in this opinion, then time has changed the purpose for which they were erected. Now anyone can enter these institutions and get away with it. The waiting list is long, and in many, patients wait months before there is a vacancy. Often this prolonged wait spells failure to regain health. And yet nothing is done about it.

It all resolves itself into the present-day agitation for lower cost for medical care—a problem which merits careful consideration, another entering wedge for state medicine which is fast becoming a reality in one form or another. Let me digress long enough to say that I have no quarrel with state medicine per se, but I do object to practicing state medicine in a capitalist society. No group should be singled out and legislation enacted to cover that particular group. As long as the profit system exists, doctors should be given the same chance that our government extends to the magnates of industry.

But we are not dealing with economics. We must suggest something constructive for the private sanatorium owner. In New Mexico we are without a state sanatorium. For years we have recognized the fact that something must be done for the indigent who is a resident of the state. Our present plan backed by the State Board of Health and all health agencies is to get a sufficient appropriation through the legislature to place these people in existing institutions. In that way, overhead can be cut and empty beds can be filled. It seems to me that by concentrated effort on the part of individuals and associations such as this some pressure could be brought to bear on all existing state, county and municipal institutions to force them not to accept patients who are able to pay for private sanatorium care. Further, rather than have more expenditure of state monies to add beds to already existing institutions, awaken sen-

(Continued to page 24)

Tuberculosis in the Aged *

BY
JOHN W. SHUMAN, M.D.
Los Angeles, California

IN JUDGING the frequency and severity of tuberculosis in the aged, one finds himself dividing his study into three parts, as outlined below:

1. Literary findings,
2. Necropsy findings, and
3. Personal findings.

Literary Findings

Thanks to Herbert R. Edwards, M.D., director of the New York bureau of tuberculosis, this study has a real bibliography. Excerpts from his leads follow:

J. A. Myers [1] summarized his screed as follows:

1st. Thirty-five tuberculous individuals whose ages ranged from fifty to eighty. Tubercle bacilli were found in all.

2nd. In nine there had been definite exposure.

3rd. Thirteen decendants had tuberculosis.

4th. Symptoms dated from six months to forty-five years, and he warned us that, "Tuberculosis in the aged is a great problem. Its greatest danger being its mildness."—That being true, tuberculosis is kind to the aged!

William H. Meade [2], another lung specialist, concludes his paper with, "There has been a laxity in the recognition of phthisis among the elderly; it is a potent menace to public health work; and the problem is not only one of custodianship and segration, but includes active care and even collapse therapy when necessary."—I dare to opine that collapsing an aged adhesive pleuritic tuberculous lung in an elderly mother or father would be, if effective, rather rough treatment.

Andrew L. Banyia [3] finishes his article thus:

1st. Tuberculosis in the aged is not rare.

2nd. Appearance of health does not exclude it.

3rd. Forty-three and one half per cent of our elderly tuberculous patients had lung hemorrhages although fibrotic lesions were most common.

4th. The course of the disease was more prolonged than in younger subjects.

Every now and then an occasional case report appears, e.g., D. A. Chamberlain [4] reports an eighty-five year old woman who had "positive" sputums and Boris M. Fried [5] reported an old man who had active tuberculosis.

Well, here is one of mine:—a sixty-nine year old widow from Florida was examined August 3rd, 1935. She complained about a 4x4 cm., firm, tender nodule in the base of her right neck. She had lost much weight over a period of seven months, during which time the lump had been treated by x-ray. The patient, relatives, and her nurse were sure that it was cancer. I did not know, so we had Edward Ruth remove it at the Hollywood Hospital. Pathologist Andrews reported, "a tuberculous gland." The wound drained for two months. Tubercle bacilli were found in the exudate. The patient gained twenty pounds in the next nine months, no doubt because her mind was relieved of cancer. Then too, the lessening of her load of active glandular tuberculosis did not hurt her.

Necropsy Findings

When W. L. McNamara, pathologist of the National Veterans Hospital of West Los Angeles, was consulted about the subject, "Tuberculosis in the Aged," he replied, "Active tuberculosis in the aged is a negligible quantity." After due consideration of several months he saw no logical reason for changing that statement.

*Contributed by request to the Rocky Mountain Tuberculosis Conference, Albuquerque, Sept. 28 - 29, 1936. From the Depts. of Int. Med., College of Medical Evangelists, and the U. S. Veterans, and Hollywood Hospitals.

He also informed me that the U. S. Public Health Department will not accept nurses under thirty years of age, because after that they are considered practically immune to tuberculosis.

Vernon L. Andrews, pathologist of the Hollywood Hospital, reviewed one hundred and nine necropsy protocols held during 1935, and found that he had recorded tuberculosis in thirteen who averaged a little over sixty-six years of age. Twelve were "healed" and died from other causes. In only one, a male aged sixty-nine, was active tuberculosis found; less than one per cent of the 109. A glance through his table shows how some aged people tolerate tuberculosis in Sunny California.

Necropsy Date	Ages	Tuberculous Incidents	Status
2-35	71	Tbc lungs and lymph glands	Healed
10-35	50	Calcified tbc left lung and peribronchial glands	"
11-35	77	Apical tuberculosis	"
26-35	55	Calcified tbc nodules of lungs	"
44-35	65	Calcified tbc nodules of right lung	"
46-35	69	Tbc left adrenal	Active
50-35	50	Calcified tbc glands of mesentery	Healed
58-35	83	Tbc left lung	"
63-35	60	One calcified tbc peribronchial gland	"
80-35	80	Calcified tbc peribronchial gland	"
94-35	70	Old tbc of peribronchial glands	"
95-35	63	Calcified tbc peribronchial glands	"
97-35	72	Tbc of apices	"

Frederick Proescher, pathologist of the San Jose General Hospital, wrote September 1, 1936:

"I have just checked up on seven hundred and fifty necropsies, ages sixty to ninety-eight, one hundred and twenty-four of which showed tuberculous findings. Only twenty-six of the one hundred and twenty-four, or one-third of one per cent, had active tuberculous lesions. Of these, seven were between 60 and 65—seven between 65 and 70—two between 70 and 75—four between 75 and 80—three between 80 and 85 —one aged 88, another 93, and still another aged 97!"

Personal Findings

Back in Iowa forty years ago, the facilities for diagnosing were not so efficient as they are to-day. It was then that grandma M. passed on from what our dear old country doctor diagnosed, "Consumption." She hacked and spat about a half-pint of sputum every morning the last ten years of her life—ever since an attack of "lung fever". She also had severe crippling arthritis with clubbing of her finger ends. None of her decendants have developed tuberculosis. Therefore, what she probably had was "osteo-pulmonary-arthritis" secondary to a bronchiectasis.

A review of seventy-five necropsies held during intern days in the Allegheny General Hospital (1910-11) with Frederick Proescher, shows that eighteen were past fifty—the age when geriatrics, or the medical care of the aged, begins. All of their lungs were more or less anthricotic from inhaling the coal-soot-ladened air of Pittsburgh. Healed or arrested tuberculosis as exhibited by fibroses and calcified bronchial lymph nodes were common incidents. However, active lesions were very rare. Those post-mortem examinations were made in the days when we were taught that eighty per cent of us had had tuberculosis in one form or the other before we reached the age of twenty and that we had secured a "cure" without diagnosis, prognosis, or treatment other than that afforded by nature.

"A review of forty-three necropsies" in 1920 of Sioux City, Iowa, for the Missouri Valley Medical Society, found that seven died from active tuberculosis and that their average age was thirty-five years.

"A survey of two hundred consumptives" of the same locality (1912-22), for the Iowa State Medical Society showed that their average age when diagnosed was thirty-one; and that sixty-four died,

their average age at death being thirty-seven.

Lawrason Brown quoted in that study previously written for Osler's medicine that, "The average length of life of the active chronic consumptive is about six years."

A study of *Medicine in Syria* (1922-23), for the *New York Medical Journal and Record,* showed that thirty-four of the five hundred hospitalized patients had far-advanced active pulmonary tuberculosis with an average age of thirty-four years; and that fourteen of them died that year.

The above only goes to show that unarrested active tuberculosis saves its owners from the complications of high-blood pressure, parkinsonian tremors, menopause horrors, and prostatism.

A search through the dead file at the office for the last thirteen years found that it contained three hundred and sixty-six records; one hundred and ninety-four of which average the age of sixty-three; that post-mortem examinations were made upon thirty-eight, and active tuberculosis was encountered by V. L. Andrews in only one. This activity was marked and in the right upper lung of a sixty-seven year old man who died from lung hemorrhage. His physician, Edward Ruth, and the author treated him twenty-four hours for right lobar pneumonia! However, the remarkable thing was that the fatal bleeding came from a bronchogenic carcinoma of the right lower lobe!

Which recalls that right here in Albuquerque, fourteen mistakes in diagnosing intra-thoracic pathology were confessed eight years ago before the Southwestern Medical and Surgical Association; but we forgot to relate that in 1924, in Ward 155 of the Los Angeles General Hospital, a sixty-four-year-old actor died from lung-trouble—diagnosed tuberculosis by some of us, and syphilis of the left lung by others, the latter on account of a four plus Wassermann. He had lost weight, had fever, spat blood, and had physical signs of chronic pneumonitis in the left upper lobe which the x-ray confirmed. After death, George Maner found a metastic cancer in the left lung which originated in the right kidney. Therefore, let us bear in mind malignancy when diagnosing lung pathology in the aged.

Many are the causes for lung failure other than tuberculosis. During the past thirteen years some of us in Southern California have had to learn about coccidiodies. One aging colored Veteran was clinically diagnosed, and mal-treated for syphilis. The post-mortem diagnosis was "miliary tuberculosis". One month later the microscopic slides were re-examined and the correct diagnosis of "Coccidiodies" established.

In passing it may be mentioned that healed contracted leathery tuberculous apices were found in the aged after death, by our fore-fathers in medicine. Also that autopsies are not the style, even to-day, on account of laziness, and indifference on the part of physicians, and the ignorance, superstition, and Mosiac laws of the laity. Then too, we must not be blind to the fact that, "What we go out to seek that we will find." The laryngologist sees chronically infected tonsils; the proctologist—active hemorrhoids, and the chest specialist—active tuberculosis—too often where they are not.

Conclusions

That is the way tuberculosis in the aged impresses us to-day. When we interrogate physicians who have been in practice from thirty-five to fifty years, all can recall one old man, or one elderly lady who really had active tuberculosis. They also state that there were many others in whom they suspected it, but x-ray, microscopic, and autopsy evidence was lacking.

When the next text book on geriatrics is written, its chapter on tuberculosis will contain the following: active tuberculosis is only occasionally encountered in folks past fifty years of age, much less than

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When Not to Use Sun Treatment in Pulmonary Tuberculosis

BY
LEROY ELRICK, M.D.
Denver, Colorado

THE PURPOSE of this paper is not to cover the whole subject of heliotherapy in tuberculosis, but only to discuss a few practical aspects of it, with emphasis on contra-indications.

So much has been said about the value of sunlight in tuberculosis that sunbaths are often prescribed as soon as a diagnosis of pulmonary tuberculosis has been made. This is most unfortunate, as direct exposure of the unclothed body to the sun is injurious in many cases. Indeed, I believe that it is a mistake to give sunbaths to a patient beginning treatment for active pulmonary tuberculosis.

It is true that among experienced phthisiologists some will employ heliotherapy more than others. There will be a difference of opinion as to its advisability in certain cases, but there is a very general agreement that the patient with a markedly active exudative pulmonary lesion should not be exposed to the direct rays of the sun. Most patients with tuberculosis, especially adolescents and young adults, when they first come under observation, have this type of lesion. Furthermore, sun treatment should not be given to a patient who has had a recent hemoptysis, and usually not to one with any fever. These contra-indications apply equally well to treatment with a powerful ultraviolet lamp, and if the individual with progressive lung disease goes to the doctor's office for the lamp treatment, he is harmed not only by the ultraviolet rays, but also by the frequent trips downtown when he ought to be resting.

Very often a history is given of the occurrence of hemoptysis or of increased cough and fever after the use of heliotherapy during the early active stage of the disease. These unfavorable developments follow heliotherapy so frequently that I believe they cannot always be attributed to coincidence or the natural course of the disease, but am convinced that the exposure to the sun's rays must be considered the cause of some of them.

In starting a new patient on treatment for tuberculosis, the first thought should be of rest, not of sun.

Heliotherapy is of great value in tuberculosis of the bones, lymph nodes, and other extra-pulmonary structures, and the exposure to the sun of a limited diseased area, such as a discharging cervical lymph node, or a rectal fistula, may be done without regard to the chest condition. Also, when the need for sun treatment is rather imperative, as may be the case in intestinal tuberculosis, it is sometimes advisable to try it in spite of moderate activity in the chest.

As a general rule, the kind of pulmonary case in which heliotherapy may be beneficial is one which has undergone a year or two of rest or collapse treatment, so that the disease is quiescent, and fibrosis is developing. Contra-indications, such as recent spread of the lesion, fever (due to the lung condition), or recent hemoptysis, should be absent. Even then the sun should be used cautiously, and the exposures reduced in length or stopped if any deleterious effects, such as increased temperature or pulse rate, undue fatigue, or anorexia are noticed. A convenient method of applying heliotherapy is to start with an exposure of one minute to the anterior surface of the body and one minute to the posterior surface, from the waist down. The time of exposure is then increased by one minute to the front and one minute to the back daily, until a total time of one or two hours is reached. If the course of treatment is interrupted for a few days by cloudy weather the next exposure should be shortened somewhat, and the following ones gradually lengthened.

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Special care must be taken with certain blonds, whose skins are inclined to burn instead of tan. They may never stand more than a few minutes exposure, and in some such individuals the treatment may have to be abandoned.

In a high altitude, where the air is usually clear and the sunlight intense, it seems probable that exposure of the body below the waist is sufficient for maximum benefit, though some physicians expose the chest also. In localities where the air contains much mist and smoke, which absorb many of the ultraviolet rays, it may be advisable to expose more of the body or to lengthen the time, in order to obtain the desired dose of the rays.

On a warm summer day the sunbath is preferably taken early in the morning, especially when this treatment is just being started. In any case, exposure to the hot sun should not be long enough to cause any real discomfort. Sometimes patients who dress and sit a long time in the sunshine obtain unfavorable reactions from overheating with the infrared rays, although their clothes protect them from most of the ultraviolet light. Those confined to bed and receiving no sun may be given codliver oil or viosterol to prevent vitamin D deficiency.

Patients often remark that they feel better on clear sunny days, and those of us who practice in relatively dry regions believe that such weather is a help to them, both physically and mentally. But this general tonic effect of indirect sunlight is an entirely different matter from the direct exposure of the body to the sun's rays. The invalid's room should be bright and sunny, as no doubt such diffused ultraviolet light as is reflected into the room is beneficial.

Summary

(1) Sunlight is a powerful remedy, to be used with discretion.

(2) As a rule, patients with active pulmonary tuberculosis should not have their bodies exposed to the direct rays of the sun.

THE RELATION OF THE SANATORIUM TO THE TREATMENT OF TUBERCULOSIS—**(Cont. from P. 18).**

timent for such plans as New Mexico is attempting and which is already being done in Colorado, Texas and I suppose other states.

Further than this I have nothing constructive to offer, but I still feel that collective effort by such organizations as ours may in time bear fruit and if such effort proves wasted, the private sanatorium will live only in the memory of pioneer workers in the field of tuberculosis.

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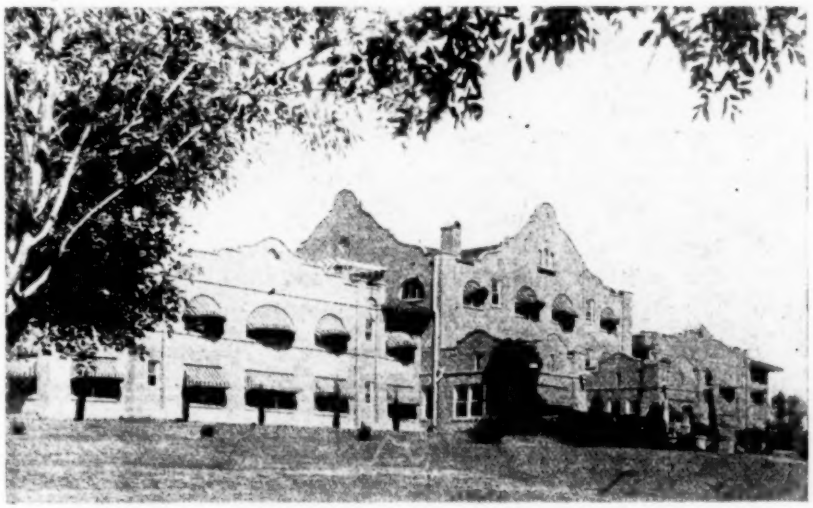

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EARLY TUBERCULOSIS—(Continued from page 10).

Summary

1. By carefully taking the clinical history and classifying the symptoms according to their etiology, and assigning to those present their combined value, one can make a probable diagnosis in nearly all frank cases of early clinical tuberculosis.

2. The sputum should always be examined, no matter where the patient thinks it comes from. A twenty-four or forty-eight hour specimen should be examined in all cases where the amount raised in small. Examining by one of the methods which concentrate the bacilli will show their presence in many instances where they are not found by the smear method.

3. Areas of atrophy of the soft tissues over the thorax should be looked for because they tell of previous inflammation in the underlying lung and pleura.

4. Diminished motion of the chest wall on one side is present in all cases of unilateral active clinical tuberculosis.

5. The x-ray is a great aid to diagnosis. Many plates on which an opinion is given are so poor that they are not only valueless but harmful. A moderately soft plate, carefully developed, is most dependable. A negative film does not imply the absence of disease.

6. Rales may indicate the presence of active disease in the underlying lung or pleura, or of a chronic or obsolete process. They must be interpreted in conjunction with other symptoms. Those who examine chests for early tuberculosis infrequently should disregard all rales except those which are of a definitely moist nature.

7. All cases in which there is a suspicion of tuberculosis which cannot be proved otherwise should have a tuberculin test made.

HOW TO HANDLE ASTHMATIC PATIENTS—(Continued from page 15).

numerous, but one can readily see that but few are practicable. Asthma is a challenge to medicine. Unfortunately, the medical profession is at fault to a certain degree, for neglect of early radical treatment and a superficial attitude lead to the development of more complicated conditions which are more difficult to cure.

In conclusion I want to emphasize the importance of remembering that asthmatic work requires long, tedious labor, special training in interpreting the results of different tests, a realization of the necessity for "team work," kind, sympathetic, and understanding handling of these sufferers, and above all, a thorough knowledge of internal medicine.

Have a definite plan, it is the best way to prevent the frustration that results from misdirected and confused efforts—both for yourself and for your patient.

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TUBERCULOSIS IN THE AGED—(Continued from page 21).

one third of one per cent. When active tuberculosis does occur in the aged it is nothing but a reactivation. When present, it affects any part of the body, chiefly the glandular structures. Its course is always milder and is more prolonged than in younger subjects. Nevertheless, it should be recognized whenever present and so managed that the affected one does not suffer unnecessarily and others become infected. The most rabid anti of regular medicine admits that active tuberculosis is contagious and desires that it be curbed.

(1) Amer. Rev. of Tbc. 21 pp. 555, "Tuberculosis in the Aged."
(2) Mich. State Med. Soc. Jour. 35, 4, pp. 233, 4/36, "Tbc. in the Elderly."
(3) Amer. Rev. of Tbc. 21 pp. 577, "Tuberculosis in the Aged."
(4) B. M. Jour. 2, pp. 565, '28. "Phthisis at the age of Eighty-five."
(5) New Eng. Med. Jour. 200 pp. 233, '29. "Hilum tbc. in an Old Man."

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ABSTRACTS

Active Pulmonary Tuberculosis Without Symptoms— GEER, EVERETT K.—*Minnesota Medicine*, 19:769-774 (December) 1936.

Active Pulmonary tuberculosis without symptoms occurs frequently as the silent progressive parenchymal lesion found not uncommonly in young adults. The typical case is illustrated by the person who feels perfectly well, presents no symptoms whatsoever, may give a history of exposure to an individual known to have positive sputum, or who has been sifted out in a Mantoux survey or has been tested by his physician in the course of a routine examination. He does exhibit a positive reaction to a skin tuberculin test and is found to have an infiltration in the chest roentgenogram usually in the first or second interspace. Rarely will these people have any abnormal physical signs in the chest.

This type of lung disease can easily lead one to regrettable conclusions. Because symptoms are absent there is a strong temptation to assure the patient that he has "only a small spot on the lung," that x-ray shadows by themselves do not produce illness, that he has no fever, has lost no weight, has no cough and therefore cannot have active tuberculosis requiring treatment or even observation. Stories such as these are not unusual. The picture which presents itself months later is one which requires prolonged treatment with an uncertain result.

The behavior of these early symptomless lesions is unpredictable. Some will retrogress without treatment. Others will be discovered and with observation will be found progressive and with bed rest will clear in a satisfactory manner.

Still others will pursue an indolent course for months or years and then within a comparatively short time will develop fulminating disease.

How should one manage persons with symptomless tuberculous lesions in the lung parenchyma? To lay down a single rule for all such cases would be arbitrary, in many instances unwarranted and in some disastrous. If we are dealing with people such as hospital employees, students in schools with adequate health service facilities or individuals who will intelligently cooperate by reporting for necessary re-examination, in many instances it will be safe to permit continuance of usual activities if frequent chest roentgenograms are taken.

If the person with the silent parenchymal lesion is not in a position to be watched closely, or if he is the type of person who is prone to hide his head in the sand and disregard sane advice, a period of sanatorium observation should be urged and in no uncertain terms. This, beyond doubt, is the ideal method of handling such individuals so that nothing is left to chance. And here, again, serial roentgenograms are essential to know accurately which way the wind is blowing.

If the infiltration decreases, a watchful-waiting policy should be pursued. If with bed rest in increase in the lesion is noted, collapse thereapy should be considered, and

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for those whose lesions progress, artificial pneumothorax without delay is imperative. But for the symptom-free, nonprogressive case, pneumothorax is clearly not indicated without a period of observation.

When collapse treatment is advisable, it should be induced in a hospital or sanatorium and not in one's office.

Danger Signals In Artificial Pneumothorax Therapy— MACKAY, W. M.—*American Review of Tuberculosis,* 34:808-814 (December) 1936.

The practice of artificial pneumothorax in the treatment of pulmonary tuberculosis, while generally considered to be a comparatively simple procedure, is not without danger to the patient in view of the fact that accidents sometimes occur during the administration of the treatment; and, while probably unavoidable, they are nevertheless frequently serious and sometimes fatal. Of these, the most serious is air embolism or a group of symptoms considered to be the result of air embolism, although the diagnosis may not be confirmed and is hard to explain in cases occurring where air has not been introduced into the thorax.

Another complication which sometimes develops while introducing the pneumothorax needle is spontaneous pneumothorax due to rupture of the lung. This can usually be rectified if given prompt attention, but, when occurring during the induction of pneumothorax, it may not be recognized as such at the time owing to the absence of a manometer reading with the needle in the pleural cavity and the feeling consequently that a free pleural space is not present. A reading may not be obtained if the needle is plugged or the rubber tubing does not fit snugly on the needle.

One should not be sure of being in the pleural space unless a free oscillation of the manometer fluid on the negative side is obtained. Slight oscillation of the manometer around the atmospheric level may occur with the needle just outside the parietal pleura. Not infrequently one hears of a patient having received large amounts of air over a period of time without there later being any evidence of pneumothorax. No doubt, in some of these cases the air was introduced into the lung or bronchial passages owing to improper interpretation of the manometric readings. Again, one is reminded of certain incidents in the course of attempts at artificial pneumothorax, such as sudden coughing, blood-spitting and tasting of the local anesthetic by the patient, all of which, though possibly not of great import, nevertheless signify that the needle has passed through the visceral pleura into the lung or air passages.

Air entering the pulmonary arteries is blocked from entering the cerebral circulation by the lungs. Therefore, it would probably be necessary for air to enter a pulmonary vein in order to cause an accident such as air embolism, as air entering a pulmonary vein would pass directly to the left auricle and thence might proceed straight to the cerebral circulation. It would thus appear that the main danger lies in air entering a pulmonary vein. To do this, it is not necessary for the needle to penetrate deeply into the lung in that the tributaries of the pulmonary vein arise in the walls of the pulmonary alveoli. This accident is more apt to occur where large adhesions are present, as one is more likely then to penetrate the lung or tear adhesions with the needle.

Sudden severe pain occurring during the attempt to induce pneumothorax may indicate that a spontaneous pneumothorax has developed. The absence of a manometric reading is no criterion that a spontaneous pneumothorax has not developed.

If free oscillations of the manometer fluid on the negative side are obtained, accidents will be rare.

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